

(21) Application No 8406072

(22) Date of filing 8 Mar 1984

(30) Priority data

(31) 58/056078 (32) 4 Apr 1983 (33) JP

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(51) INTCL³
F24C 15/20

(52) Domestic classification
F4V B3D B4D B4E

(56) Documents cited
GB A 2105841 GB A 2088041 GB 1435710
GB 1225328 EP A 0029807

(58) Field of search
F4B B2P

(54) Cooker hoods

(57) Cooker hood comprises a water-screen filtering chamber (4) provided with a spray nozzle (5) from which detergent solution is sprayed to cool hot exhaust air containing smoke, oils and fats emitted by a heat-generating cooking appliance (2), and a detachable rotary baffle (11) located in the ascending air current and designed to remove emulsified particles of oils and fats and moisture contained in the exhaust air during cooling. An opening (OP₂) is provided in a main body (1) and a door (36) is mounted on the opening. The hood discharges the exhaust air into the atmosphere after cleaning the same.

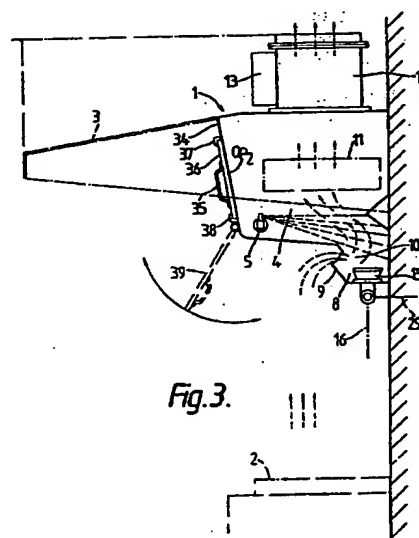


Fig. 3.

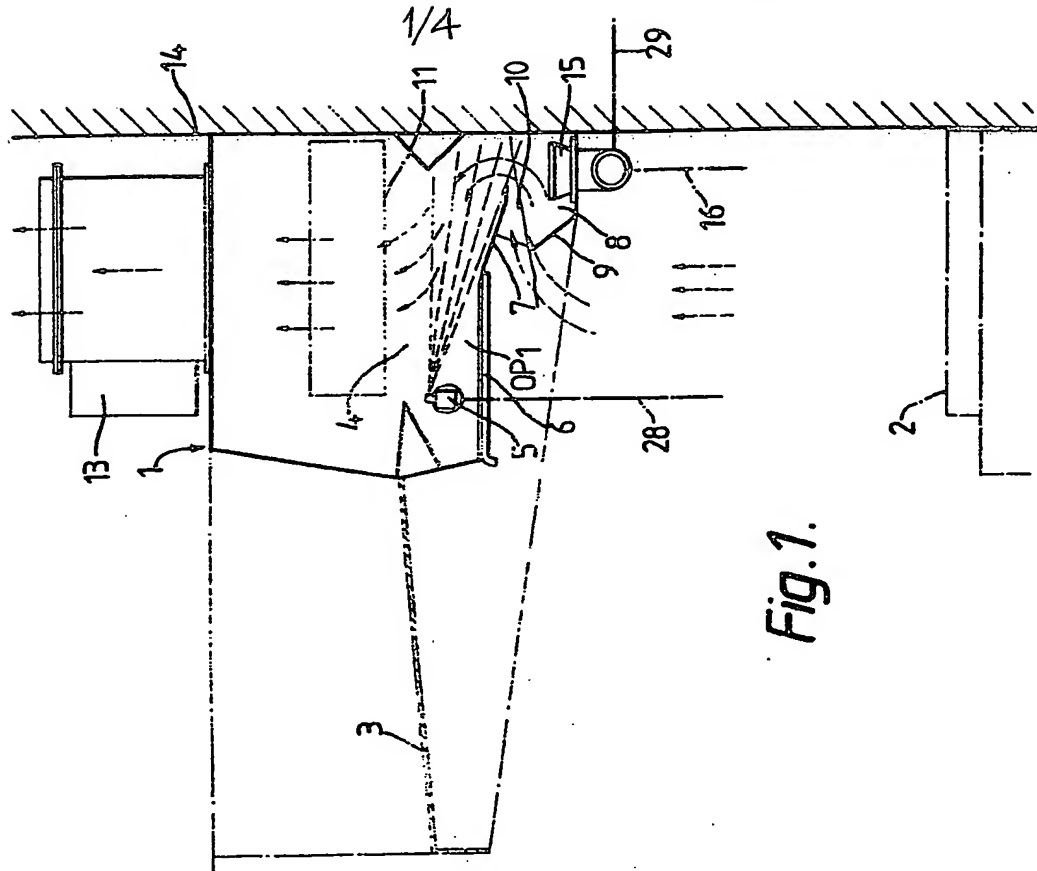


Fig. 1.

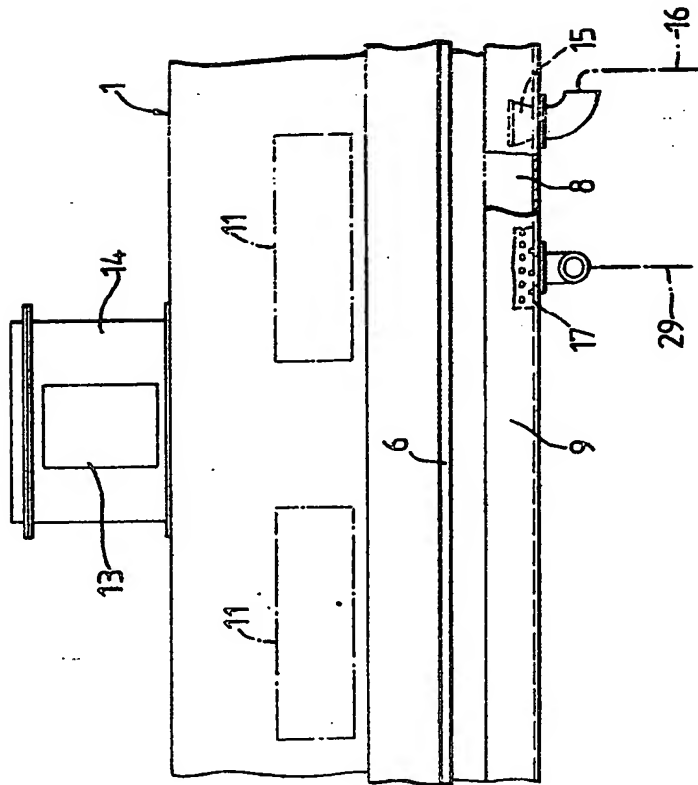
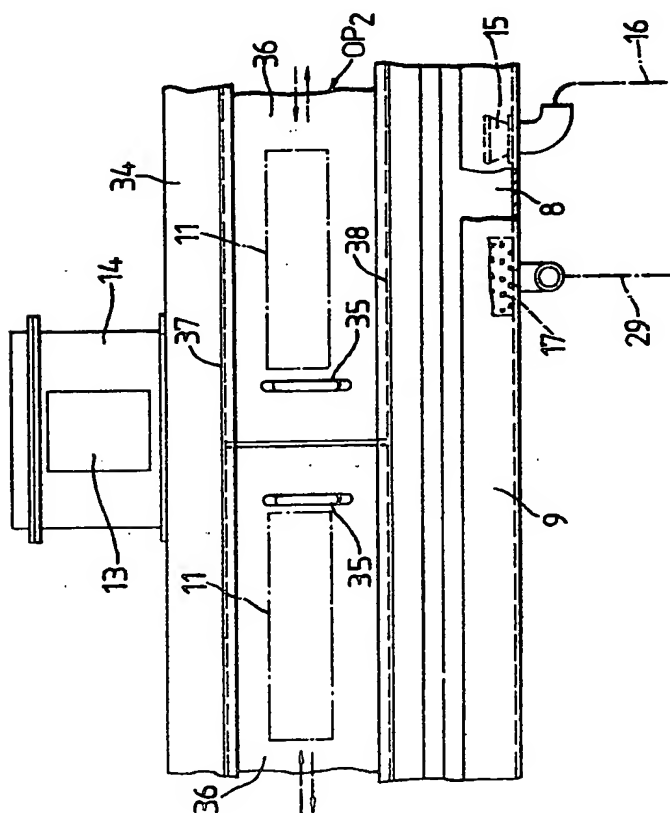
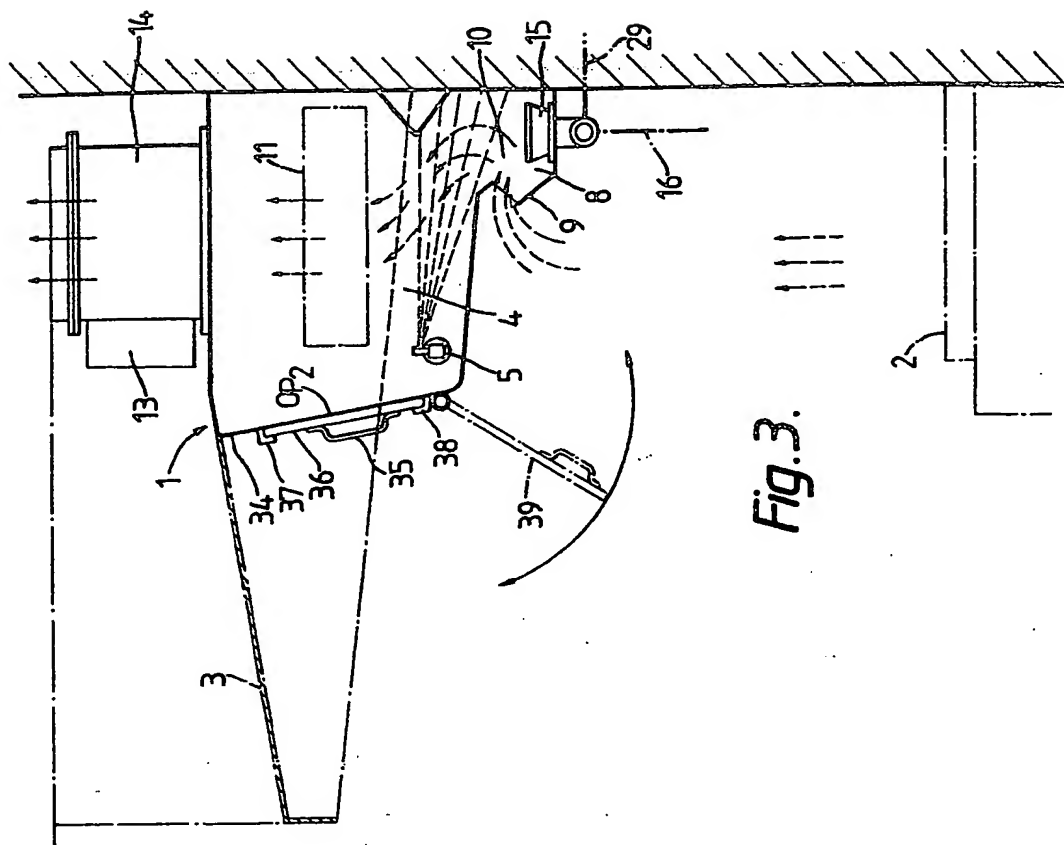


Fig. 2.



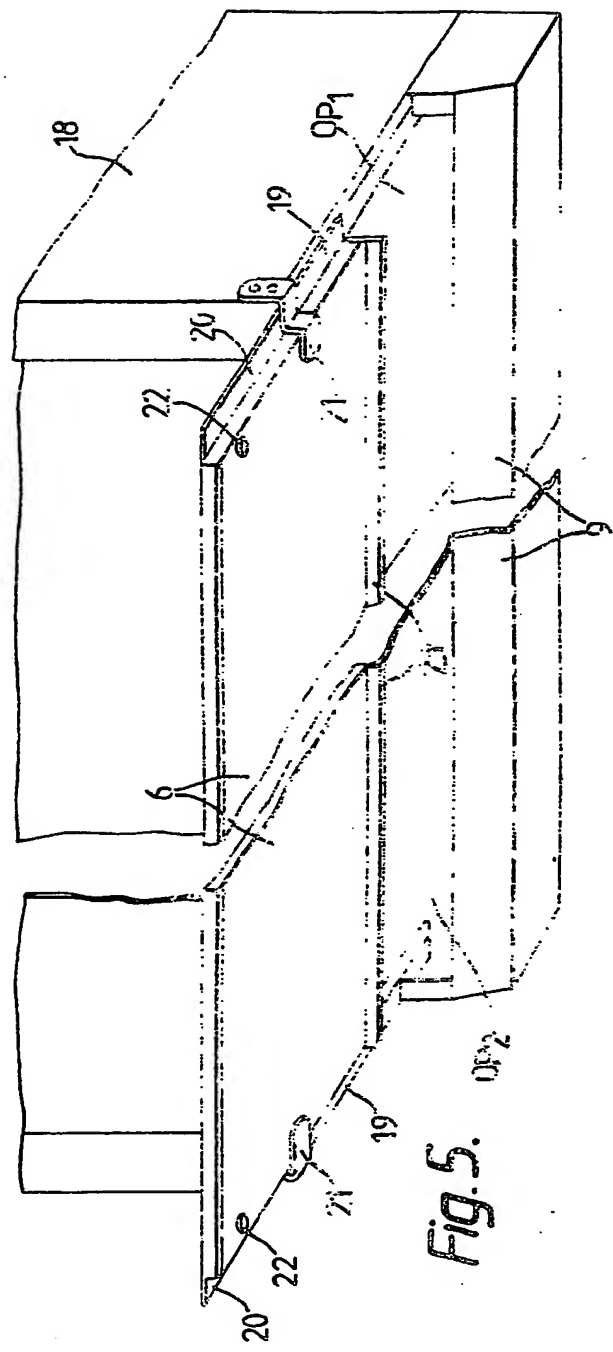


Fig. 5.

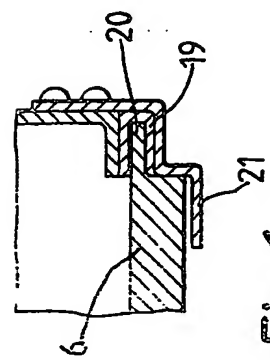


Fig. 6.

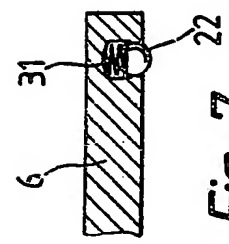


Fig. 7.

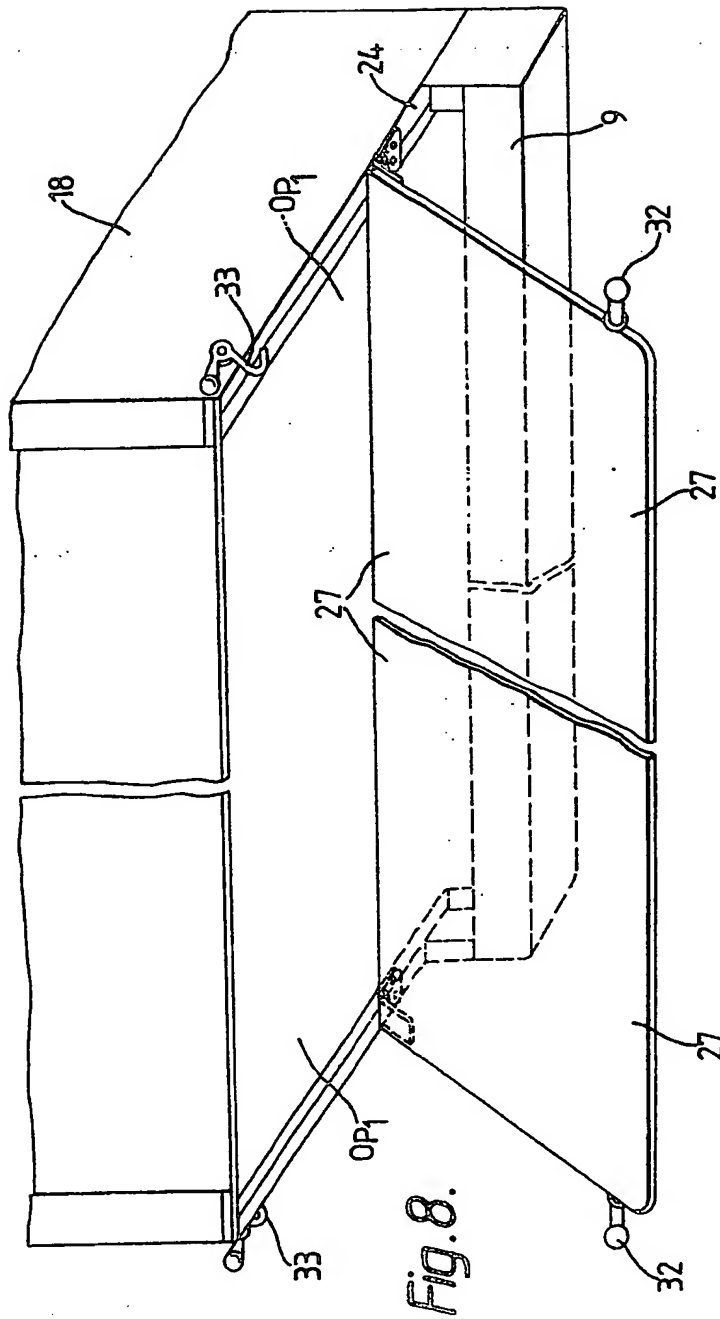


Fig. 8.

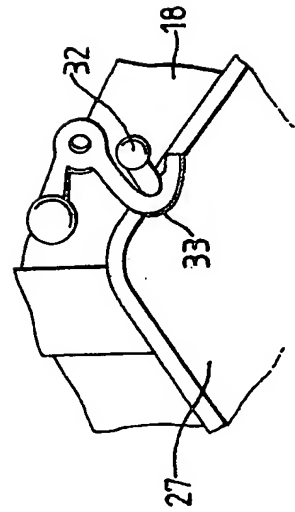


Fig. 9.

SPECIFICATION

Improvements in or relating to extractors

5 This invention relates to improvements in or relating to extractors and, in particular, to an extractor in which hot exhaust air containing smoke, oils and fats emitted by a heat-generating cooking appliance, such as a range or fryer, is sucked into the extractor main body, a detergent solution is sprayed from a spray nozzle in the extractor main body through the hot exhaust air, the emulsified oils and fats and moisture contained in the ascending exhaust air are removed for example by means of a detachable rotary baffle and the cleaned air is then discharged into the atmosphere.

In a previously proposed extractor, the rotary baffle and spray nozzle are cleaned, replaced, or otherwise serviced by removing a panel which is provided on the side of the casing housing the rotary baffle and spray nozzle section. The extractor main body is installed high above the heat-generating cooking appliance so that the panel is located at a height of about 2.4 m from floor level and above the hood mounted on the extractor main body. For this reason, cooking personnel encounter difficulty in gaining access to the rotary baffle and spray nozzle for cleaning and maintenance purposes when the performance of the rotary baffle is impaired by oils and fats stuck to its surface, or when the spray nozzle has been restricted by detergent scale and other foreign matter, or when the surrounding area of the water-screen filtering chamber provided with the spray nozzle has become stained. In this case, the services of a specialist are required and he utilises a ladder or stepladder from which he climbs on to the hood, removed the panel and cleans the components in the extractor. This work entails much difficulty because the foothold is insecure and the space between the hood top and the ceiling is normally narrow.

Furthermore, some authorities require that a vertical wall be installed from the periphery of the hood to the ceiling so as to minimise the area where dust can accumulate in the cooking area and/or remove the passage along which rats may move. If this vertical wall is installed, it becomes extremely difficult to clean the components inside the extractor through the panel because an opening must be made in the vertical wall. In fact, the installation of such a vertical wall which extends from the periphery of the hood to the ceiling is impractical.

It is an object of the present invention to enable the provision of an extractor whereby the above disadvantages may be overcome or at least mitigated.

55 According to the present invention there is provided an extractor for extracting and cleaning fumes generated during use of a cooking appliance, which extractor comprises a housing having an inlet for receiving fumes and an outlet for discharging fumes, the housing being provided with a further opening, a spray nozzle disposed in the housing for spraying a mixture of water and detergent into the path of the

fumes, means disposed in the housing for recovering water and detergent from the fumes, and a movable door for closing the further opening.

Thus, an opening is made below or around the water-screen filtering chamber at a height to which cooking personnel can gain access. A door which is easily opened can be installed on this opening so that maintenance personnel can gain access to the components of the extractor as necessary with cleaning tools, such as a brush, and with organic solvents, such as detergent, after opening the door. The rotary baffle can be simply cleaned or thoroughly cleaned after removal. The spray nozzle can be cleaned or removed with ease. Furthermore, the inside and the periphery of the water-screen filtering chamber located below the rotary baffle can be easily cleaned.

For a better understanding of the present invention, and to show how the same may be put into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

FIGURE 1 is a vertical side-sectional view of an extractor in accordance with the invention;

85 FIGURE 2 is a partial front elevational view of the extractor of Figure 1;

FIGURE 3 is a vertical side-sectional view of an alternative form of extractor in accordance with the invention;

90 FIGURE 4 is a partial front elevational view of the extractor of Figure 3;

FIGURE 5 is a perspective view of a door of the extractor of Figure 1;

FIGURES 6 and 7 are partial cross-sectional views of the door of Figure 5;

FIGURE 8 is a perspective view of an alternative door for the extractor of Figure 1; and

FIGURE 9 is a partial perspective view of the Figure 8.

100 Referring now to Figures 1 and 2, an extractor main body 1 is disposed immediately above a heat-generating kitchen appliance, such as a range or fryer. An exhaust hood 3 is disposed below the extractor main body 1 so that hot exhaust air containing smoke, oils and fats emitted by the heat-generating appliance 2 is sucked into the extractor 1. A water-screen filtering chamber 4 is provided in a lower portion of the extractor main body 1. Spray nozzles 5 from the detergent solution is sprayed through the hot exhaust air ascending from the exhaust hood 3, are provided in water-screen filtering chamber 4. An opening OP₁ facing downwards is disposed below the spray nozzles 5 and at a height which is accessible to cooking personnel. In this opening OP₁, a door 6 which is removable in any direction as illustrated in Figure 6, is mounted so as to extend almost horizontally. Alternatively, a door 27 may hinge on pins at the rear edge of the opening OP₁, as illustrated in Figure 8 so that it can be opened by pivoting about the pins.

120 A circuitous passage 10 through which the hot exhaust air ascends runs between a partition panel 7 disposed behind the opening OP₁ and a front panel 9 of a reservoir 8 located below the inlet of the extractor main body 1. Above the circuitous passage 10 and the

detergent solution screen for and by means of the spray nozzle 5 is disposed a detachable rotary baffle 11 which rotates rapidly in response to the suction caused by a suction fan. The oils and fats contained in the hot exhaust air, soot and dust present in the smoke, and waterdrops and moisture are removed by means of the rotary baffle 11.

Above the rotary baffle 11 is an exhaust flue 14 provided with a damper drive apparatus 13. The hot exhaust air coming from the heat-generating appliance is cleaned, cooled, and discharged into the atmosphere through a duct communicating with the exhaust flue and having a suction fan.

Referring now to Figures 3 and 4, an opening OP_2 is provided in the front casing of the water-screen filtering chamber 4. In the opening OP_2 a sliding door 36 or a hinged door 39 which is attached to the upper or lower edge of the opening OP_2 with pins is mounted. Both types of door are easily manually opened by cooking personnel or other persons.

In order automatically to supply the detergent solution to the spray nozzles (5, 12), a main tank and a detergent tank are installed in the cooking area at a relatively high level. The detergent solution is prepared in the main tank in which the water, such as mains water, and detergent fed from the detergent tank are mixed. The detergent solution so prepared is then fed to the spray nozzle 5 under pressure from the feed pipe via a detergent solution supply line comprising a solenoid valve, strainer, priming- or non-priming-pump, and delivery pipe. From the spray nozzle 5 the detergent solution is sprayed in the form of a water screen through which the hot exhaust air ascending through the circuitous passage 10 is passed. As a result, the exhaust air is cleaned.

During the hot exhaust air cleaning operation, the detergent solution is received by the reservoir 8 after it is sprayed from the spray nozzle 5. The supernatant portion of this recovered solution is discharged through a drain pipe 16 connected to an overflow/drain cock 15. On the other hand, the detergent solution below the supernatant portion is filtered through a reservoir strainer 17 and again fed under pressure to the spray nozzle 5 through a return pipe 29 which branches from the detergent solution supply line and then through the strainer and pump feed pipe 28. The detergent solution circulation cycle is thus completed.

Fresh detergent is automatically supplied from the main tank at fixed intervals, so that economical and effective use can be made of the detergent and water.

In each of the extractors illustrated an opening is provided in the vicinity of each rotary baffle. Referring, for example, to Figures 5, 6 and 7, a guide 19 is mounted on each of the left and right lower edges of the casing 18 of the extractor main body 1. A slider 20 attached to each side of the door 6 is inserted into the respective guide 19 so that the door 6 opens and closes as the sliders slide in the guides 19. In this manner, access to the opening OP_1 can be gained. The door can be opened and closed, for example, as follows. A spring stopper 21 extends below the casing 18. A ball stopper 22 provided with, for example, a compression spring 31 which recedes under pressure from the spring stopper 21 and projects when

released from this pressure during opening and closing of the door is mounted near the front lower edge of the door 6. Also, a beading 23 is provided at the rear end of the door 6 so that excess sliding movement forwards is prevented by the spring stopper 21 after the opening is exposed to view.

Turning now to Figures 8 and 9, to enable the door 27 to be opened, each of its rear corners is attached by means of a pin hinge to the underside 24 of the casing 18. A retention pin 32 is connected, for example, to each of the right and left side edges of the door 27. Also, a pivotally movable hook 33 is mounted adjacent the lower front edge of the casing 18 on each side thereof so that the hook easily catches and releases the respective retention pin 32. When the door 27 is closed to cover the opening OP_1 , the retention pin 32 is caught on the hook 33 so as to prevent the door 27 from falling. On the front panel 9 of the reservoir 8 is a buffer, such as a spring stopper (not shown in the drawing), which stops the door 27 when it is opened to uncover the opening OP_1 by releasing the retention pin 32 from the hook 33.

Referring now to Figures 3 and 4, a sliding door 36 with a handle 35 can be provided to cover the opening OP_2 which is located in the front casing of the extractor main body. The water-screen filtering chamber 4 can be rendered watertight for example by inserting two or more sliding doors between guide rails 37, 38 mounted on the upper and lower edges of the opening OP_2 , one door 36 for each rotary baffle 11, and by applying a heat resistant sealant to the contact surface of each sliding door 36 so that the door comes into close contact with the guide rails 37, 38. Alternatively, a hinged door 39 can be mounted to the upper or lower edge of the opening OP_2 by means of pivot pins so that the opening is exposed to view when the door is pivoted downwards or upwards about the pins similarly to the door described above.

In summary, the extractor comprises a water-screen filtering chamber provided with spray nozzles from which detergent solution is sprayed to cool hot exhaust air containing smoke, oils and fats emitted by a heat-generating appliance and a detachable rotary baffle located in the ascending air current above the water-screen filtering chamber and turned by the flow of air so that the emulsified droplets and waterdrops containing soot and dust are removed from the exhaust air during cooling. An opening is made in a lower portion of the extractor main body and covered with a door so that the opening is exposed to view as necessary by opening the door when the extractor is not in use (for example, after the end of cooking using the heat-generating appliance). Through this opening cooking personnel or other persons can cursorily clean the rotary baffle by hand using suitable cleaning tools or easily remove the same for thorough cleaning. They can also clean the spray nozzles without or after removing them. Unlike conventional extractors, it is easy to clean the area surrounding the water-screen filtering chamber located below the rotary baffle through the opening.

Accordingly, the invention enables efficient use of the rotary baffle and spray nozzles throughout their useful lives and effective expulsion of hot exhaust air produced by heat-generating cooking appliances. In

conclusion, this invention is greatly conducive to the creation of a sanitary environment by cleaning the air prevailing in the cuisine.

CLAIMS

- 5 1. An extractor for extracting and cleaning fumes generated during use of a cooking appliance, which extractor comprises a housing having an inlet for receiving fumes and an outlet for discharging fumes, the housing being provided with a further opening, a
10 spray nozzle disposed in the housing for spraying a mixture of water and detergent into the path of the fumes, means disposed in the housing for recovering water and detergent from the fumes, and a movable door for closing the further opening.
- 15 2. An extractor according to Claim 1, wherein the means for recovering water and detergent comprises a detachable rotary baffle.
3. An extractor according to Claim 1 or 2, wherein the opening is in a side wall of the housing.
- 20 4. An extractor according to Claim 1 or 2, wherein the opening is in a bottom wall of the housing.
5. An extractor according to any one of the preceding claims, which further comprises a hood for guiding fumes into the inlet of the housing, the
25 opening being disposed below the hood.
6. An extractor according to any one of the preceding claims, wherein the door is pivotally movable with respect to the housing.
7. An extractor according to any one of Claims 1 to
30 5, wherein the door is slidably movable with respect to the housing.
8. An extractor according to any one of the preceding claims, which further comprises means for retaining the door in a closed position.
- 35 9. An extractor according to Claim 8, wherein the retaining means comprises a pin which is fixed to one of the housing and the door and a hook which is pivotally mounted on the other of the housing and the door.
- 40 10. An extractor according to Claim 8, wherein the retaining means comprises a first abutment which is fixed to one of the housing and the door and a second abutment which is resiliently mounted on the other of the housing and the door.
- 45 11. An extractor according to any one of the preceding claims, which further comprises means for limiting movement of the door.
12. An extractor according to Claims 7 and 11, wherein the limiting means comprises beading provided on an edge of the door and abutment means
50 fixed to the housing.
13. An extractor according to Claims 10 and 12, wherein the abutment means fixed to the housing is the said first abutment means.
- 55 14. An extractor according to any one of the preceding claims, which further comprises at least one handle for opening and closing the door.
15. An extractor, substantially as hereinbefore described with reference to, and as shown in, Figures
60 1, 2, 5, 6 and 7 of the accompanying drawings.
16. An extractor, substantially as hereinbefore described with reference to, and as shown in, Figures 1, 2, 8 and 9 of the accompanying drawings.
17. An extractor, substantially as hereinbefore
65 described with reference to, and as shown in, Figures

3 and 4 of the accompanying drawings.

18. Any novel feature or combination of features described herein.

Printed in the United Kingdom for Her Majesty's Stationery Office, 8818935, 11/84, 18996. Published at the Patent Office, 25 Southampton Buildings, London WC2A 1AY, from which copies may be obtained.